

Name _____

Date _____

1. Circle true or false for each statement below:

a. A rotation followed by a dilation maps a pre-image to a congruent image. TRUE/FALSE

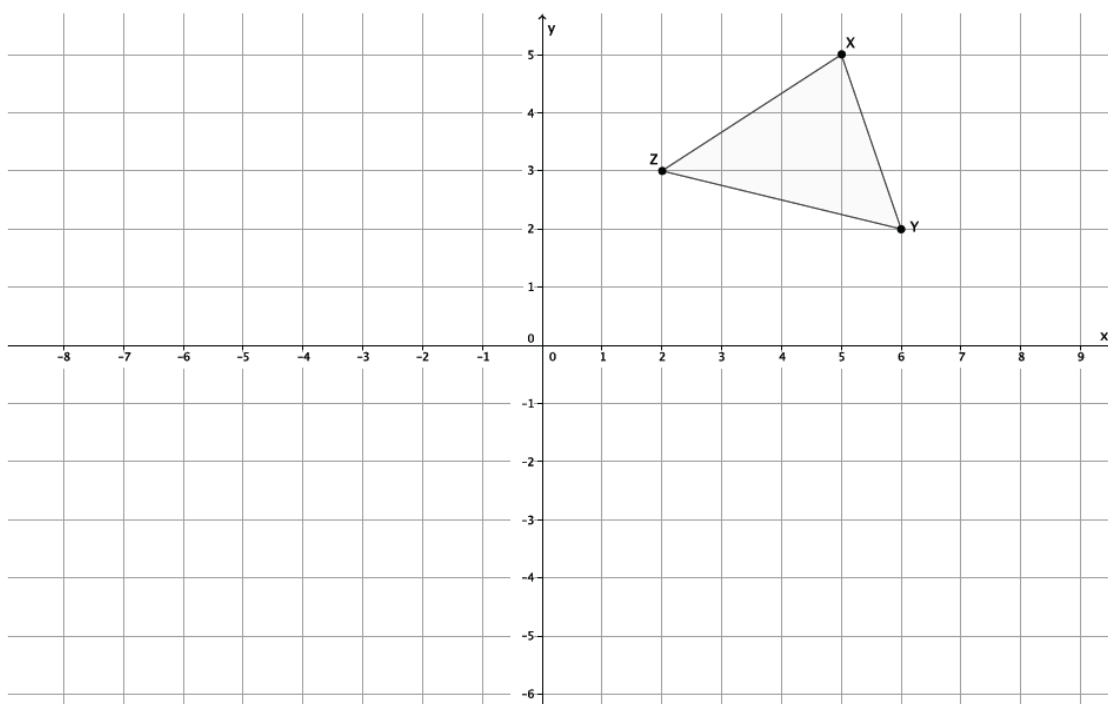
b. A translation followed by a reflection maps a pre-image to a congruent image. TRUE/FALSE

c. A dilation followed by a translation maps a pre-image to a similar image. TRUE/FALSE

d. A rotation followed by a dilation maps a pre-image to a similar image. TRUE/FALSE

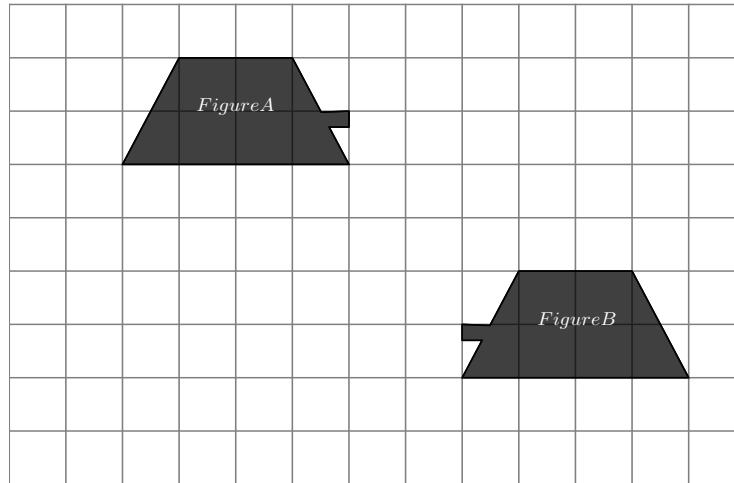
e. If two figures are similar, the sequence of transformations that maps one figure to the other must include a transformation. TRUE/FALSE

2.

a. Rotate $\triangle XYZ$ around the origin clockwise 90° . Label the image of the triangle with X' , Y' , and Z' .

3. Use the picture below to answer the questions.

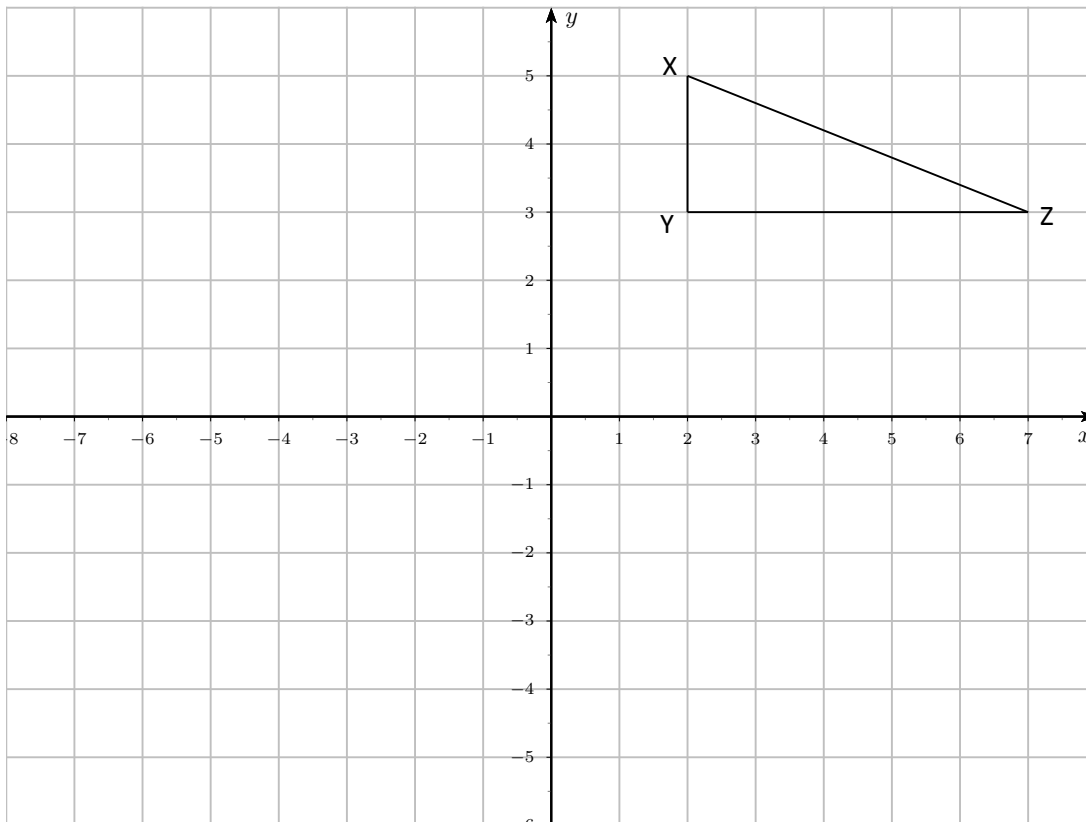
Figure A has been transformed to Figure B.



- a. Can Figure A be mapped onto Figure B using only translation? Explain. Use drawings as needed in your explanation.
- b. Can Figure A be mapped onto Figure B using only reflection? Explain. Use drawings as needed in your explanation.

4. Use the graphs below to answer parts (a) and (b).

- a. Reflect $\triangle XYZ$ over the x-axis. Label this image $X'Y'Z'$. Then translate this new image by the rule $(x,y) \rightarrow (x-3, y+4)$. Label the final image $X''Y''Z''$.



5. You use a sequence of motions to transform a figure with point K. First you dilate the figure to get K' . Then you reflect the figure to get K'' . Circle the scale factor and the line of reflection that makes the mapping true.

$\frac{1}{4}$

$\frac{1}{2}$

4

$K(4, -2)$ X

$\rightarrow K'(1, -1/2)$ reflection in

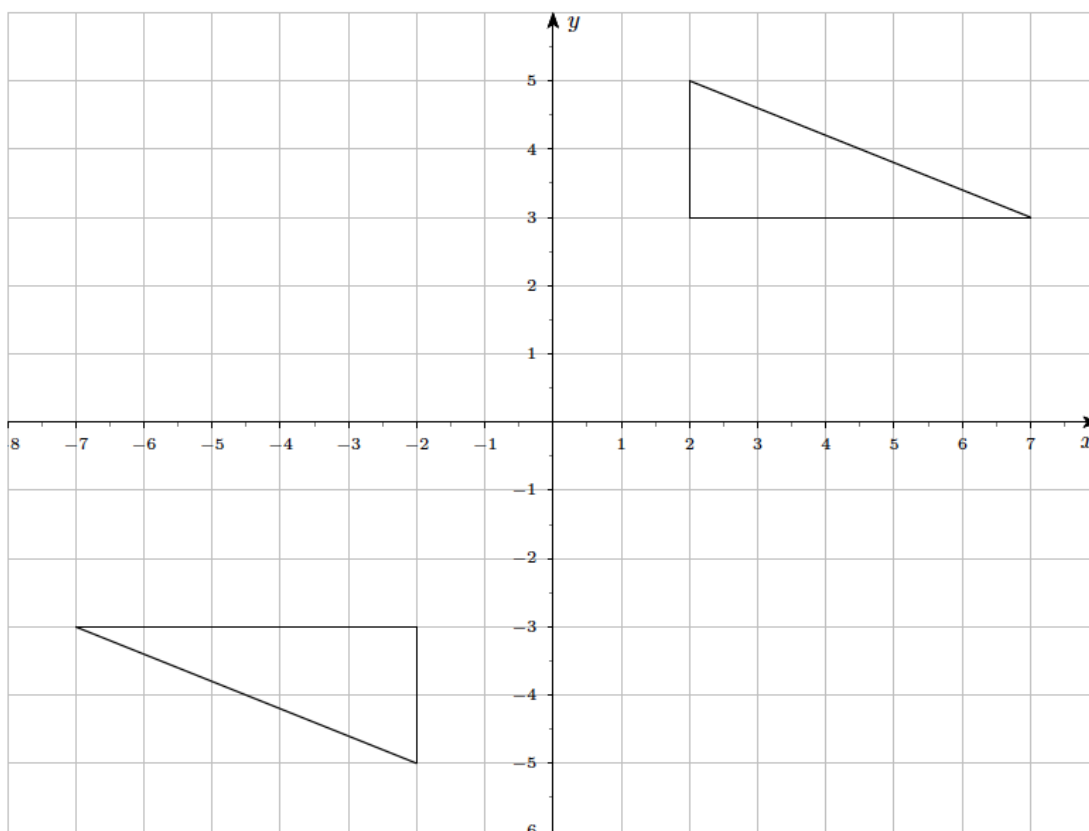
x - axis

y - axis

$\rightarrow K''(-1/2, 1)$

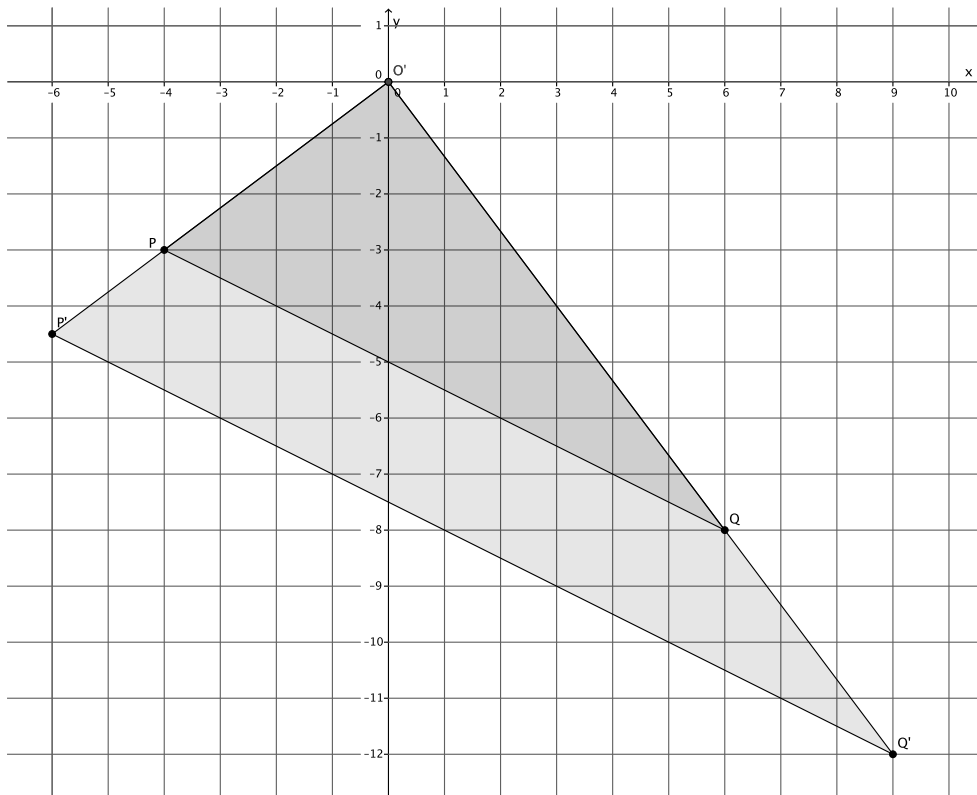
6a. One triangle in the diagram below can be mapped onto the other using two reflections. Identify the lines of reflection that would map one onto the other.

b. Can you map one triangle onto the other using just one basic rigid motion? If so, explain.



7. Use the diagram below to answer the questions that follow.

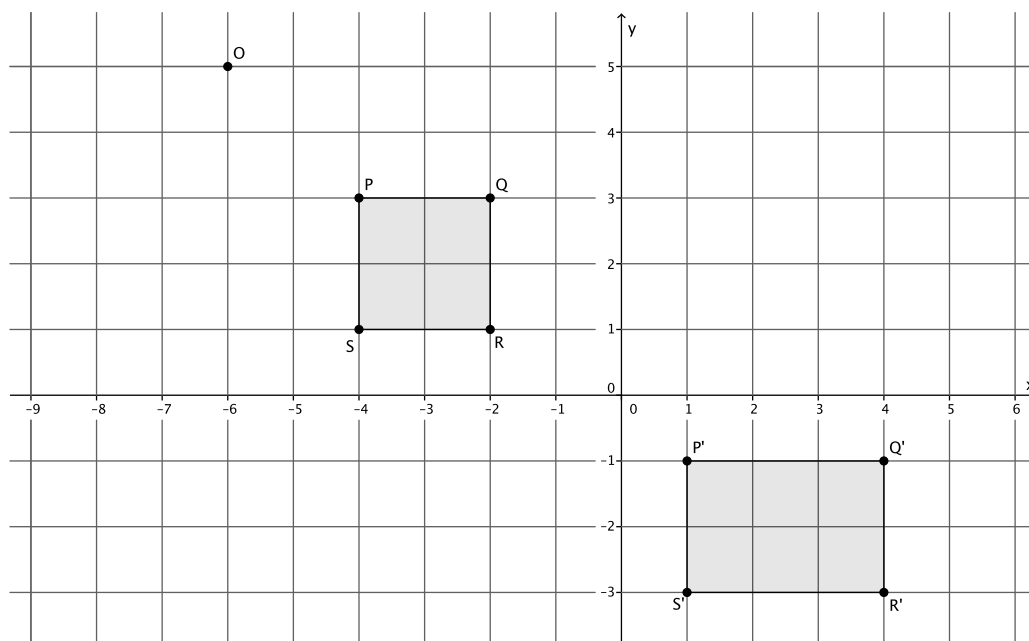
Let D be the dilation with center O and scale factor $r > 0$ so that $\text{Dilation}(P) = P'$ and $\text{Dilation}(Q) = Q'$.



- $|OQ| = 10$ units and $|OQ'| = 15$ units. What is the scale factor r of dilation D ?
- What are the coordinates of P ?
- What are the coordinates of P' ? Show all work

- d. $|OQ| = 10$ units, $|OQ'| = 15$ units, and $|P'Q'| = 11.2$ units. What is the length of $|PQ|$? Round your answer to the tenths place, if necessary.

8. Is there a dilation D with center O that would map figure $PQRS$ to figure $P'Q'R'S'$? Explain your answer.



9. You perform a sequence of motions on a figure with point A. First you reflect the figure over the line $y = 2$ to get A' . Then you dilate the figure by the scale factor $\frac{1}{2}$ to get A'' . Use numbers from the box to complete the statement.

-6
-3
-1
$-1/2$
1
$2 \frac{1}{2}$
5

A (-3. _____) \rightarrow A' (_____, 5) \rightarrow A'' (-1 $\frac{1}{2}$, _____)

10. Triangle ABC is located at points $A = (-4, 3)$, $B = (3, 3)$, and $C = (2, -1)$ and has been dilated from the origin by a scale factor of 3. Draw and label the vertices of triangle ABC . Determine the coordinates of the dilated triangle $A'B'C'$, and draw and label it on the coordinate plane.

